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ABSTRACT

A series of tests was administered to Ontario, Canada students who had completed the eighth grade: mathematics, reading, language, written English, social studies, science, health, physical fitness, French as a second language, French as a first language, written French, values, moral reasoning, problem solving, and attitudes. Approximately 50 school boards and 15,000 students participated in this project, which had three goals: to (1) provide information to students, parents, and teachers concerning individual achievement; (2) provide information about achievement overall, within a system, and within a school; and (3) provide formative evaluation about current curricula. Objectives used to construct the tests were categorized into those items which the student "must know", "should know", and those which it would be "nice to know". Individual students' test results were then classified according to three bench marks: level of competence, honors, and high honors. Statistical data are presented for each test, including correlation data between subtests. Item analysis data presented for each test include the educational objective tested, a sample test question, classification (must know, should know, or nice to know), name of subtest containing the item, and a brief description of overall results. (GDC)

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REPORT ON THE INTERMEDIATE EVALUATION PROJECT - PHASE II

Summer 1978

I. Project Purposes and Description
II. Comments on Tests Used in 1978
III. Analysis of Specified Items on Selected Tests Used in 1978
IV. Future Developments
V. Persons Now Involved With the Project

I. Project Purposes and Description

We have tried to keep this report to a reasonable length and also we have no wish to duplicate information available elsewhere. The report, then, should be read in conjunction with the Report on the Intermediate Evaluation Project published in September 1977. Reports on the written English testing in 1977, and the reading and language testing in 1978 are available from Peter Evans, Head, Midnorthern Centre, Wm. MacMillan Public School, 1050 Lonsdale Avenue, Sudbury, Ontario, P3B 3X4.

The Intermediate Evaluation Project is a program of the Office of Field Development of OISE. The project began in the fall of 1975. In the spring of 1977 tests in six subject areas were administered in Ontario schools. The second phase of testing was completed in April and May of 1978. The principal objectives of the project were:

1. to provide information to students, parents and teachers concerning the achievement of the individual;
2. to provide general information on the achievement of students over all, within a particular system, and within a particular school; and
3. to help school systems change their programs and methods in the light of specific information about strengths and weaknesses of their current curricula.

The test instruments were intended to assess the accumulation of knowledge, understanding and skills at the end of the eighth year in school. The eighth grade level was chosen since the majority of students have received common programs until that level. While it was expected that the tests would be used primarily for grade eight students, some boards chose to administer them to grades seven and/or nine.

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The tests are essentially criterion referenced. Students were measured according to their achievement of the criteria of education established by the Ministry of Education in its curriculum documents.

OISE researchers derived specific educational objectives from the provincial documents. The objectives were restated in more explicit terms and sent to participating teachers for validation. Test items based on these objectives were developed by OISE researchers and by teachers. Volunteers from school boards were asked to comment on the items. All test items were pre-tested with students not involved formally in the testing program. The results of the pre-test and the teachers' comments were taken into account in the preparation of the final test instrument.

In 1977, tests were administered in the following areas: written English, mathematics, problem solving, attitudes, science and francais lecture (as a first language). New, but equivalent, items were developed for most of the 1977 tests for administration in the spring of 1978. Additional areas tested were: reading, language, French comprehension (second language), francais ecrit (first language), social studies, health, physical fitness, values and moral reasoning. Most tests were available in both English and French.

All but three of the tests are of an objective format with four or five options. Written English and francais ecrit required considerable participation by the classroom teacher. Throughout the year students wrote assignments which were scored by the teacher on the basis of common criteria previously developed in consultation with teachers. The holistic scoring of the two final assignments was also done by teachers. The test of physical fitness involved the completion of eight activities, each measuring a specific area of fitness.

All tests (with the exception of values) produced scores between 0 and 240. For each test three levels of performance were determined. A score of 110 indicated that a level of competence had been achieved. Students could be considered to have attained basic "literacy" in that subject area. A second level, honors, was achieved with a score of 150 which signified that students had a good understanding of the subject area and should have a solid basis for further study at the secondary school level. The third level, high honors, was attained with a score of 200 which indicated that students had achieved a degree of mastery in a particular subject. The three levels could also be interpreted as meaning

"must know," "should know," and "nice to know." In attitudes, the three levels were designated as "acceptable attitudes," "favorable attitudes," and "highly favorable attitudes."

All school boards in Ontario were invited to participate. In 1977, twenty-five boards participated and forty-eight boards participated in 1978. Almost twenty thousand students took one or more tests in the second phase. Since each board was encouraged to choose participants and tests in a manner most useful to it, no attempt was made to randomize the testing sample. Participation varied from one class in a system taking one test to all grade eight classes in a system taking one or more of the tests. OISE and the boards shared the cost of administering the project.

INTERMEDIATE EVALUATION PROJECT 1977/78

STUDENT PARTICIPATION BY BOARD

BOARD	WRITING	MATHEMATICS	PROBLEM SOLVING	ATTITUDES	SCIENCE	READING LANGUAGE	SOCIAL STUDIES	HEALTH FITNESS	FRENCH COMPREHENSION	VALUES
Atikokan		86	46	94	48		52	94	49	89
Brant	28					278				
Brant RCSS							399		389	
Carleton	271									
Carleton RCSS	59*	57*	52*	63*	57*	60*	60*	51*		60*
Central Algoma	394					286				
Cochrane-Iroquois RCSS		35 212*								
Durham RCSS							209			
Dryden RCSS		29				29			28	
East Parry Sound	387	396			395	379				
Espanola	116	161	154	162	157	164	161	152	123	163
Elgin County	302	398				156				
Fort Frances	98	92	97	50	48	97				50
Frontenac RCSS	629					657			327	
Grey County	253	1170	158		139	258	178	51	266	
Kapuskasing	83	81	85	85	83	83	81	84	84	85
Kapuskasing RCSS	44 85*	44 323*	42 81*	42 78*	42 52*	43 333*	45 76*	43 81*	46	44 81*
Kenora RCSS		76				79				75
Kirkland Lake RCSS	24 15*	20 54*	9*		8*	41				
Lakehead RCSS									107	
Lake Superior		44	46				45	47	45	
Lambton County		198	74	120	50	175	132	96	93	189
Lincoln RCSS		345				381				
Manitoulin	201					196				
Muskoka	58	144	144	146	141	147	147	147		144
Niagara South						146				
Nipissing	89									
Nipissing RCSS		277*								
Norfolk					694				279	
North Shore	132					127				
North Shore RCSS	53									
Northumberland	148	90	36	55	74	93	37	36	39	38
North York									89	
Ottawa Board	443	352	359			478				
Ottawa RCSS				181*						
Oxford County	769									
Perth County	30	54	29	36	40	32		25	30	29
Peterborough Board	233					58				
Prescott Russell		32		10		35			29	11
Red Lake District	216	194	202	94	199	204	199	200	152	94
Sault Ste. Marie	498			19						
Sault Ste. Marie RCSS	233					384				
Stormont RCSS	89*	95*								79*
Sudbury	69[illegible]					1578				
Timiskaming	5[illegible]	27		35					84	
Waterloo RCSS	[illegible]2	58			53	115	57			
Wentworth County	521	537				562				
Windsor						329				
Total English	7092	4663	1472	948	2163	7590	1742	975	2259	1011
Total French	248	1018	142	322	117	393	136	132		160

*French Tests

II. Comments on Tests Used in 1978

Summary Statistics

In order to provide more precise data on the results, we are using a slightly different reporting format from that used last year. For most tests, we are providing a cross-section of questions, describing the characteristics of the question, typical errors made, percentage of students getting the answer correct (the question may have been phrased positively or negatively originally), the objective on which the question was based, and whether we classify the question as M (must know), S (should know), or N (nice to know). In the case of physical fitness, we provide a breakdown of the percentages of pupils achieving the various standards. We do not provide more detailed breakdowns for the following tests: written English, francais ecrit, francais lecture, values, moral reasoning, reading, and language. There are no items as such, in written French and English; francais lecture was taken by a very small number of students; results on individual values and moral reasoning items would be meaningless without a contextual commentary; and Peter Evans is providing a more detailed analysis in reading and language. In all cases, the results on the specific questions described in the test cross-sections are based on all students taking the tests, i.e. Grade 7 and Grade 8. As the numbers of Grade 7 students were quite small this year, they would not affect the percentage getting a particular question right by more than one or two percentage points. The analytical cross-sections of the remaining tests are provided in Section 3. The reader who is primarily interested in the substantive results on a particular test may wish to turn directly to Section 3 at this point.

In the case of tests given in 1977 and 1978, boards and schools may wish to make comparisons in their achievement over the two years. We would advise caution. No two tests are ever completely identical. No two sets of students are ever completely identical. Comparisons cannot be made at all between written English in the two years on the basis of the raw statistics. We have tried to make the scores in 1978 reflect more closely the judgments of the scorers. The resulting distribution of students is quite different from that in 1977, and, we think, a little bit closer to the truth. In contrast, the mathematics tests are very comparable. The 1978 science test is essentially equivalent, but

some of the items seem to have been made slightly easier in their new format. The 1978 problem solving test, on the other hand, has proved somewhat more difficult than its 1977 counterpart and the difference in means probably reflects a difference in difficulty. The tests used in the two years in attitudes and francais lecture are identical.

The standard error in a test scored on a 0 - 240 scale is obviously larger numerically than one scored on a 0 - 100 scale. The standard error (reliability) of our test is generally a little greater than would be found on typical norm referenced tests. There are two reasons for this. Firstly, we deliberately determined to include a wide range of questions in our tests even when they did not clearly fit the pattern of the other questions. For example, we included questions that nearly everyone could answer correctly if those questions dealt with important objectives. Similarly, we included questions that hardly anybody could answer correctly, if they were clearly related to provincial objectives. Both those kinds of questions would probably be eliminated from a norm referenced test. Secondly, our test statistics are based on a very narrow range of students (nearly all of whom are at the eighth grade level). Our measures of standard error and reliability would be much smaller numerals if we had done two things: (1) eliminate the intentional error among sub-tests (by definition, sub-tests are meant to measure different things); (2) based our test statistics on a much wider range of students (say from Grade 6 to Grade 10). In other words, the way you calculate your test statistics will influence their magnitude. We believe that the standard errors we report are useful ones in the context of counselling eighth and ninth grade students. We do emphasize that all measures of achievement are prone to error--criterion referenced tests, norm referenced tests, and teachers' marks.

The table, Summary Statistics, gives the basic statistical information on all tests administered in 1978, with the exception of values for which there is no total score.

SUMMARY STATISTICS (TOTAL TESTS)

TEST	N	MEAN	STANDARD DEVIATION	RELIABILITY	STANDARD ERROR	COMP* %	HIGH HONORS** %
Mathematics 1977 Grade 8	2635	125	39	.80	17	66	3
Mathematics 1978	4756	121	39	.80	17	58	2
Mathematics 1978 Grade 8	4008	125	39	.80	17	62	3
Science 1977 Grade 8	1044	136	36	.84	14	79	2
Science 1978	2189	132	39	.87	14	69	5
Science 1978 Grade 8	2041	133	39	.87	14	69	5
Attitudes 1977	2223	173	36	.84	15	92	13
Attitudes 1978	1126	162	41	.87	15	82	8
Francais lecture 1977 Grade 8	58	120	37	.71	20	60	0
Francais lecture 1978 Grade 8	393	107	42	.76	21	50	1
Geography 1978	1704	127	42	.81	18	66	5
Geography 1978 Grade 8	1529	126	42	.81	18	62	5
History 1978	1749	107	42	.76	20	50	1
History 1978 Grade 8	1558	107	41	.76	20	50	1
Canadian Studies 1978	1684	126	42	.68	23	62	4
Canadian Studies 1978 Grade 8	1487	126	42	.68	23	62	4
Social Studies 1978	1619	119	36	-	-	58	1
Social Studies 1978 Grade 8	1454	119	36	-	-	58	1
Written English 1977 Grade 8[1]	4293	155	24	-	-	97	3
Written English 1978	7144	152	34	-	-	89	8
Written English 1978 Grade 8	5137	157	33	-	-	92	10
Health 1978	1009	139	39	.87	14	76	7
Health 1978 Grade 8	871	139	39	.87	14	76	7

SUMMARY STATISTICS (cont'd)

Problem Solving 1977 Grade 8	1594	111	34	.70	18	50	.3
Problem Solving 1978	1542	98	34	.68	19	38	.1
Problem Solving 1978 Grade 8	1377	99	34	.68	19	38	.1
Francais Ecrit 1978	249	151	29	-	-	2	6
French Comprehension 1978	2310	140	44	-	-	73	10
French Comp. 1978 Grade 8	1796	140	44	.84	17	73	10
Moral Reasoning 1978	1206	105	43	-	-	54	1
Reading 1978	7502	137	42	.81	18	73	7
Reading 1978 Grade 8	5555	141	42	.81	18	76	8
Language 1978	7551	128	37	.85	14	66	3
Language 1978 Grade 8	5541	132	36	.85	14	73	4

[1]Written English. The 1977 and 1978 results are <u>not</u> completed. A more detailed report will be available from Peter Evans of the Midnorthern Centre.

*This column refers to the number of students who achieved the level of competence.

**This column refers to the number of students at the high honors level.

Values and Moral Reasoning

These two tests are frankly experimental. We would be delighted if teachers interested in values education would examine the results and compare them with their own assessments of a sample of students in their school. One way to do this would be to make the students chosen for the sample (selected on the grounds that the teacher knows the students rather well) as high, medium, or low on the qualities the test purports to measure (justice, achievement, love, consideration, self-fulfilment, patriotism, fear-based moral reasoning, rule-based reasoning, and post-rule, rational reasoning). The teacher scores could then be compared with the test scores (under one standard deviation below mean, between one standard deviation below and one standard deviation above mean, and more than one standard deviation above mean). The teacher should make his or her own assessment before checking the test results. We would be glad to hear from any teacher who would do this--naturally, we would not be interested in the names of the students involved.

The values test forced students to choose among the six values drawn from the Education Act and Ministry Guidelines (justice, achievement, love, consideration, self-fulfilment, and patriotism). Pupils were given the amount they scored on each value, expressed as a percentage of the maximum possible score on that value. Obviously, a 100% in one value would virtually eliminate any score on most of the others. We don't really know how equivalent one scale, say justice, is with another, say achievement. We encourage students to examine any scores that were particularly high, particularly in comparison with most other students.

VALUES

Value	Mean Raw Score	Standard Error	Mean %	Standard Deviation %
Justice	14.2	6.8	26	15
Achievement	15.6	7.3	24	24
Love	14.8	8.5	21	13
Consideration	21.3	9.4	27	13
Self-Fulfilment	15.3	8.3	20	12
Patriotism	5.8	3.6	27	20

There are two test characteristics with which we must be concerned--reliability and validity. In this case, there is no total test score so we are dependent on the sub-tests. Obviously, the degree of error in sub-tests based on a few items will be much greater than in the larger test based on many items. The standard errors in the sub-tests are very high--indicating they are not very reliable.

As for validity, we can get at this by having individual teachers assess the validity of the tests compared with their own assessment, and by comparing the results with results of other tests with which they might reasonably be associated.

VALUES CORRELATION TABLE

Values	MR(T)	MR(P)	Att.	Others	Env.	Hist.	Can.St.	Math.	Read.
Justice	.07**	.05*	.05	.01	.02	.09*	.09*	.03	.08*
Achievement	.08**	.09**	.04	.02	.07	.00	.00	-.01	.06
Love	.02	-.03	.04	.07	.07	-.05	-.02	-.04	-.06
Consideration	.07**	.05*	.13**	.08*	.11**	.05	.05	.02	.10**
Self-Fulfilment	.05*	.09**	.07*	.15**	-.01	.11**	.08*	.09*	.07
Patriotism	.00	.00	-.06	-.08*	-.02	-.01	-.01	.01	-.01

Levels of Significance: .05*, .01**

The table shows the correlations between the six values and moral reasoning (total), moral reasoning (post rule), attitudes (total), attitudes to others, attitudes to environment, history, Canadian studies, mathematics, and reading.

The achievement value does not correlate at all with most measures of achievement. It seems that the self-fulfilment value might well be collapsed with the achievement value (with which it is negatively related as a spurious result of the construction of the test). The justice value does correlate, at a very low level, with good moral reasoning and with performance in history and Canadian studies, which makes some kind of sense. The love value does not correlate with anything

else--but there is nothing else we would particularly expect it to be related to. The consideration values does correlate significantly with several of the attitudes variables, as one might expect. The patriotism variable does not correlate with anything (including Canadian studies) except for a negative relationship with attitude to others. Further development of this test should see it concentrate on three, or at most four, dimensions--achievement-self-fulfilment; justice; consideration-love; and possibly patriotism.

Responses to particular tests items suggest a notably low level of patriotism--which bears out the findings on the attitudes test. In one question that focussed on the difficulty that Canada faces as an independent country, only 22% chose a nationalistic response that Canada should remain independent no matter what the price is. A further 29% felt that it should try to remain independent as long as it can maintain its quality of life. A further 22% thought Canada was basically all right but was going down hill, 15% thought Canada was all right as long as it didn't interfere with what they personally wanted to do, and 9% thought it was natural for Canadians to be almost as American as the Americans.

The responses also appear to suggest that the most important values to young people are love and consideration, followed by achievement and self-fulfilment, with justice, to many philosophers the central value, coming a poor third.

If the values test tends to suggest very generally young people might benefit from values education, the moral reasoning test certainly provides additional evidence. Only 43% strongly agreed that it is foolish to touch a hot stove because it will hurt you, only 29% agreed strongly that fear of punishment was a good reason for not shoplifting, only 35% that telling the truth was a good reason for saying something--yet 29% agreed strongly that because mercury poisoning hurts people, no mercury should be used at all! In other words, there is very little evidence that the average student knows how to cope with general rules about life--when they make sense and when they don't. Large proportions failed to apply general rules in situations where they obviously make good sense and many students do apply general rules in situations where they don't. Students were generally easily tricked by a nice sounding but logically false argument.

The moral reasoning test looked at three types of reasoning--reasoning based on fear, reasoning based on universal rules, and reasoning based on the testing of various rules in a rational way against a given ambiguous situation. A premise behind the test is that there are different occasions appropriate for

the use of any of the kinds of reasoning and that the best reasoner is the one who uses the most appropriate mode for the occasion. Thus while the three levels of reasoning are roughly equivalent to Kohlberg's three levels, there is no assumption that a given individual must work out most problems consistently at one level or another.

MORAL REASONING CORRELATION TABLE

	Moral Reasoning (basic)	Moral Reasoning (rule)	Moral Reasoning (post rule)	Moral Reasoning (total)
I.Q.[1]	-.14	-.10	.16	-.07
Attitudes	.08 *	.08*	.17**	.13**
Reading	.20**	.23**	.29**	.30**
Language	.09*	.21**	.26**	.23**
Writing	.06	.24**	.32**	.25
Mathematics	.08*	.15**	.24**	.18**
Problem solving	.04	.15**	.26**	.18**
Social studies	.08*	.22**	.25**	.23**
Science	.11*	.20**	.21**	.22**
French Compre.	.04	.10*	.18**	.13**

Levels of significance: .05*, .01**

[1]The N is 77 in the case of I.Q.. meaning that much higher correlation coefficients are required for statistical significance.

What stands out from the correlation table is the consistent relationship between post-rule reasoning and most achievement tests. The critic will be tempted to argue that moral reasoning is just another way of measuring intelligence, and indeed it does seem to be slightly correlated with I.Q. However, as we shall see, I.Q. (with the same N) correlates with all our achievement measures (except French) in the .5 to .7 range. Moral reasoning seems to be related to achievement, particularly in English, independently of I.Q. It is also interesting to note that there may well be a negative relationship between basic moral reasoning and

intelligence but no evidence of such a negative relationship between basic moral reasoning and achievement. Critics of schools could get some fun out of that one.

The test statistics show that the test is actually testing something, and that something does not seem to be I.Q. Maybe, just maybe, the test is testing moral reasoning--a thought that would really confound the cynics.

MORAL REASONING TEST CHARACTERISTICS

	Mean	Standard Deviation	Standard Error	Reliability
Basic	40.5	22	14	.54
Rule	40.5	19	11.7	.61
Post Rule	29.5	15	9.2	.62
Moral Reasoning (total)	105	43	9	.77

Problem Solving

Our principle interest in the problem solving test this year was in its relationship with other variables. For example, we were interested to see whether the problem solving test was in fact a measure of a combination of reading ability and intelligence (as some of our critics allege--and as we sometimes fear ourselves). We cannot answer that question definitively. It is always possible that the test consists of reading, intelligence, and error. Indeed, our parallel version of the test did not work this year as well as last year's test. It was not so much that items proved difficult, but that some proved somewhat ambiguous. We shall attempt to prepare a combined improved version for publication.

PROBLEM SOLVING CORRELATION TABLE

	Logic	Experimental	Relations	Total Problem Solving	I.Q.
Logic	-	.38**	.47**	.81**	.51**
Experimental	.38**	-	.43**	.71**	.28**
Relations	.47**	.43**	-	.84**	.58**
Total P.S.	.81**	.43**	.84**	-	.61**
I.Q.	.51**	.28**	.58**	.61**	-
Math	.47**	.42**	.47**	.58**	.67**
Science	.42**	.37**	.41**	.51**	.59**
Language	.48**	.45**	.46**	.58**	.72**
Reading	.44**	.41**	.43**	.53**	.78**

Level of significance: **.01

The table shows that there is neither an unusually high relationship between problem solving and I.Q., nor one between problem solving and reading. If we combine this evidence with Floyd Robinson's research showing that problem solving can be taught, there seems to be no particular reason to believe that problem solving is nothing more than a test of reading and intelligence.

Social Studies

GRADE 8 RESULTS

	Mean	Max.	Standard Deviation	% Reaching level of competence	% Reaching honors	% Reaching high honors
Geography-Canada	103	192	34	65	29	3
Geography-S. Continents	24	48	11	64	36	16
Geography - Total	126	240	42	65	28	3
Hist.-Pre-Confederation	58	126	24	47	9	1
Hist.-Post-Confederation	50	114	22	50	33	3
History-Total	107	240	41	47	15	1
Canadian Studies	126	240	41	65	28	4
Social Studies-Total	119	240	36	60	20	1

The results show that there are some important gaps in young people's knowledge and understanding of their country. Analysis of results on particular questions will help the reader decide whether the tests were really too hard, as some teachers complained. Certainly it is not fair to suggest that the tests picked out obscure pieces of knowledge--being able to identify Ontario on a map of Canada is hardly an obscure question. Further, students did considerably worse on questions that tested relationships and understanding than they did on the straightforward factual questions. It is easy for the critic to say he doesn't care whether students know where London is in Ontario but that critic should be prepared to state what it is that he does care about.

French Comprehension (as a second language)

GRADE 8 RESULTS

	Mean	Max.	Standard Deviation	% Reaching level of competence	% Reaching honors	% Reaching high honors
Listening	37	60	14	69	42	18
Comprehension	75	120	26	72	43	17
Reading	28	60	12	75	43	4
French Total	140	240	44	75	21	9

The results were generally extremely heartening, and ran quite contrary to what the press, and many teachers, seem to expect. The majority of students have a reasonable competence in the basics of French. It is worth asking how it is that pupils can master a fair knowledge of French vocabulary, while failing to master basic information and understanding of the geography and history of their country.

These results are particularly interesting as we had wondered whether we were wise to test reading--and even the comprehension section required some capability of interpreting the written word. In fact, pupils did at least as well on the reading sections as on the listening sections.

Language and Reading

Peter Evans has communicated directly with teachers involved in these tests. The results generally confirm our reports on the written English last year. The majority of students are clearly literate, contrary to popular press reports and

university professors' unsupported opinions. Most students can write, read, and recognize incorrect usage. There is, nevertheless, a very substantial minority in the region probably of 12% that is functionally illiterate. Similarly, the proportion that shows real command of the English language is rather small. There do not seem to be any special strengths or weaknesses in reading or language--but more detailed information is available from Peter Evans.

Health and Physical Fitness

Students generally performed rather well on the health tests as the summary table shows. Unfortunately, the physical fitness results show that knowledge is often quite separate from action. Students typically know what they ought to be doing--but that doesn't mean they do it. In that way, they are rather like the rest of us--overweight, with insufficient exercise and poor eating habits.

Physical fitness, like lower level objectives in French, math, and the social studies, is clearly something schools can do something about if they want. Perhaps more schools should consider adopting direct action programs to promote physical fitness. The average Canadian eighth grade student is not very physically fit, and this is particularly true of girls. Do we care?

Written English

Peter Evans is analysing the results of this test separately. Essentially the standard is similar to last year's, although one of the test topics proved a little easier for most pupils to handle. We have already noted that test statistics in written English should not be compared with last year's.

Science

This year's test may have been slightly easier than last year's, although performance was slightly worse. We have no explanation for this. The most obvious possibility is that the sample of students taking the test this year was a somewhat less able one. It is also possible that for some reason the sample of students on which we based our assessment of difficulty was abnormal and, for some reason, was more able to cope with some of this year's items than other Ontario students.

Mathematics

This year's test was essentially the same level of difficulty as last year's and performance proved to be identical.

Francais Ecrit

This testing program was modelled on the written English program. The general level of written expression in French was surprisingly similar to that written in English, except that there were apparently more technical errors in language use. Most pupils were surprisingly fluent, given the dominance of English in Ontario. However, we should be very wary of generalizing from the very small sample of students taking the test.

I.Q.

Thanks to Jean Carruthers in Kapuskasing, we were able to correlate I.Q. with all our test results. It is on Kapuskasing students that all I.Q. statistics we have reported are based. Generally, I.Q. correlated at the expected level of .5 to .7 with the cognitive tests. Correlation of I.Q. with French comprehension (as a second language) is somewhat lower. I.Q. correlates with French listening .41; French comprehension .26; French reading .22; and French total .36; (compared with social studies .65; math .67; science .59; language .72; reading .76; health .63; attitudes .28; and moral reasoning - .07).

III Analysis of Specified Items on Selected Tests Used in 1978

MATHEMATICS

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Develop competence in multiplication, division, addition and subtraction of real numbers and their subsets	Add three 4 digit numbers	M	Computation		85
	Multiply a 4 digit number by a 3 digit number	M	Comp		94
	Divide a 5 digit number by a 3 digit number to two decimal places	M	Comp		45
	Work out change for simple purchase	M	Comp		68
Learn to identify the elements of a set	Describe a set of numbers	S	Understanding	The set was comprised of the even numbers from 4 to 12. Twenty per cent thought it was a set of whole numbers.	61
	Solve number statements to find the incorrect one	M	Und	Knowledge of >, <, +, - and x symbols was required to compute the statements.	71
	Identify the largest common factor of 8, 12 and 80	S	Und	Thirteen per cent chose 768 and 14% chose 80.	57
	Identify the number that is not a prime factor	S	Und	Forty-three per cent chose 2. The correct answer was 9.	38
Understand and apply the commutative, associative and distributive laws using integers and rational numbers	Multiply and then divide pair of rational numbers	M	Comp	Seven per cent failed to invert before dividing. Nine per cent inverted the dividend.	68
Understand the relationships among decimal notation, fractions and percentages and be able to solve problems involving their use	Calculate simple percentages to find the one with the largest value	M	Comp	Twenty-six per cent thought 5% of 500 was larger than the correct answer 100% of 125. Seven per cent thought 50% of 200 had the largest value.	56
	Calculate discount and sales tax	S	Problems	Twenty-four per cent calculated the discount correctly but did not add the sales tax.	26
Solve problems involving surface areas and volumes of simple solids	Calculate the area of a right angle triangle	N	Measurement	Thirty-eight per cent multiplied b x h and 21% multiplied the three sides.	23
Solve problems requiring an understanding of metric units length, volume, mass, speed and temperature	Calculate number of hectares in a field (m^2 per hectare given)	M	Meas	Fourteen per cent chose the answer in m^2 rather than hectares. Eight per cent simply added the dimensions of the field.	54
	Solve a time, distance, speed problem	S	Prob	Twenty-two per cent gave the kilometres travelled rather than the number still to be travelled as the question asked.	40
Practise numerical substitution in algebraic expressions	Calculate the value of an algebraic expression	S	Algebra Geometry		54
Learn to construct and interpret graphs	Read a simple graph	M	Meas		89
Discover geometric relationships	Calculate the exterior angle of a triangle	S	Al/Geom	Twenty-three per cent gave the value of the adjacent, interior angle.	45

PROBLEM SOLVING

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Learn how to solve logical problems by applying recognized rules of inference to given data to arrive at objective conclusions	Choose the diagram which depicts the relationship described	M	Logic	The correct answer showed one group as a subset of the other. Sixteen per cent chose a diagram showing the intersection of the sets and 11% chose the wrong group as the subset.	57
	Select the correct statement based on the verbal and pictorial information given	M	Logic	Forty per cent disregarded one of the two diagrams and chose an option which made a false assumption. Twenty-six per cent chose an option which was partially true but not as comprehensive as the correct option.	23
	Select the statement which is the most reasonable conclusion to be made based on the information given	S	Logic	Twenty-eight per cent chose an option which was so general it did not reflect the data given. Ten per cent chose an option which did not take into account key information. The two other incorrect options were based on irrelevant information.	43

PROBLEM SOLVING (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Learn how to solve experimental problems by determining causal relationships between independent and dependent variables. Students will develop the ability to predict the affect of a dependent variable on a system	A family is facing the possibility of the mother returning to work. The position of each family member is described. Students are asked to identify the question which would be best for considering what the mother should do.	S	Experimental	The best answer dealt with the basic question of the benefits from mother working or not working. Twenty-six per cent chose an option weighted lower but not incorrect which focused on the things to be considered in choosing a job. The incorrect options dealt with specific questions which would not be the basis on which an important decision would be made.	30
	A scientific experiment is described in words and a diagram. The results of six trials are shown in a chart. Select the pair of trials which would provide an answer to the questions being investigated.	S	Exp	An additional thirty-two per cent chose an option which tested the required variables but with only one trial. The incorrect options tested the wrong variable.	31
	A student is testing the effect of a high protein diet on mass gained by mice. Five tables are given which summarize the experiment. Students are asked to choose the table most suitable for the experiment.	M	Exp	The correct option allowed for measuring and comparing the increase in the mass of mice on regular and protein diets. Twenty-eight per cent chose an option which weighed the mice after 3 weeks without taking into account the mass before the experiment began. Nine per cent chose an option which took into account the condition of the mouse's coat and amount it slept.	39
Learn how to solve correlational problems where deliberate experimental intervention is not possible	Identify the picture which best shows the relationships among distance, time, speed and fuel consumption of a racing driver.	M	Relationship	Thirty-one per cent chose an option which showed only half the information. Fourteen per cent chose a diagram containing all the information but the relationships were distorted.	41
	A table of population data by province is given. Students are asked to ascertain the accuracy of three statements by referring to the data.	S	Rel	Thirteen per cent were wrong on one conclusion, 29%, on two conclusions and 9% were wrong on all three conclusions.	47
	By fishing two hours in the mornings and evenings, Simons concludes that fish bite better in the evening since he caught more at that time. Students are asked to choose the best comment on his conclusion.	S	Rel	The best comment agreed that he would be right provided the methods and location were the same at both times of day. Twenty-one per cent chose an unsubstantiated comment on fishermen's claims. Eighteen per cent thought the only way to be sure would be to do the fishing oneself.	39

ATTITUDES

Objective	Item Characteristics	Subtest	% Correct
Develop a positive attitude toward school	My school is a good school for kids like me	School	66
	There are not too many rules and regulations at school	School	51
	On the whole, I enjoy school	School	64
Develop a positive attitude toward reading	I enjoy leisure reading	Read	74
	I frequently go to the library to choose a book I would like to read	Read	53
Develop a positive attitude toward education and its usefulness for further development	A good education will help in whatever I do after leaving school	School	81
Develop an appreciation of the natural environment	I enjoy looking after plants or animals	Environment	80
	Bird watchers and other peculiar people are not the only ones to fuss about losing trees and farmland	Env	77
Develop an appreciation of and enjoy participation in the arts.	I enjoy music	Arts	87
	I have kept art that I have created	Arts	69
	I enjoy drawing and painting	Arts	75

ATTITUDES (Continued)

Objective	Item Characteristics	Subtest	% Correct
	I have tried to compose music	Arts	40
	I am learning to play an instrument	Arts	44
Come to understand oneself and develop self respect	Reading books helps me understand myself and my friends	Read	51
	School helps me to understand things I am good at and things I am not good at	School	90
	I do quite well in some things at school and that helps me feel good	School	89
Develop a positive view of Canada	I would be very sorry is my family and I moved to another country	Others	70
	There is a difference between the United States and Canada	Others	63
	I would mind if Quebec separated from the rest of Canada	Others	60
Develop a willingness to work with others to serve a social purpose	In the last week, I have worked in school with others to reach a common goal, i.e., school band, team sport	Others	59
	In the last month I have done a job at school outside school hours that I did not have to do, i.e., student council, helped teacher	Others	48
	In the last month I have done a job outside school and my home that helped others, i.e., helped a club, delivered papers	Others	63

SCIENCE

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Identify major categories of environmental components and the differences among classes in a category	Choose the list of items that come from living things	M	Biology	In the correct list were cotton, milk, leather and bread. Eight per cent chose a list including wire.	83
	Identify the one not found in the solar system	M	Physics	The Milky Way was the correct response. Sixteen per cent chose a moon.	69
Identify major parts used for plant and/or animal processes and identify the function of the parts or the general characteristics of the process	Identify the main function of an artery	M	Biol	Thirty-five per cent thought the artery pumps blood and 21% thought it filters blood.	27
Identify familiar instances and simple characteristics of major physical and chemical phenomena	A compound is a substance composed two or more:	M	Phys	Nineteen per cent chos materials and an almost equal number chose mixtures. The remainder chose liquids and particles.	41
	Identify a chemical change	M	Phys	Twenty-five per cent chose evaporating and 20% chose freezing over the correct answer rusting.	38
	Identify the process causing a change in the state of matter	M	Phys	Most chose the correct answer freezing of water. The rest chose almost equally among options including the rusting of iron and the stretching of an elastic.	55
Identify characteristics, causes and/or effects of processes appearing in the environment over time	Identify the order of a house fly's life cycle	S	Biol	Most of the incorrect responses resulted from a confusion of the pupa and larva stages.	59
	Identify the tree native to Ontario	M	Biol	Most correctly chose spruce. Eight, seven and six per cent chose rubber, palm and redwood respectively.	72

SCIENCE (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Identify characteristics of organisms and their relationships to the environment which promote survival	To what is a foot of an eagle adapted?	N	Biol	Most chose grasping from the options which also included walking, scratching, climbing and standing.	84
Identify the meaning of concepts and processes used to describe and quantify environmental features	How would one determine whether two metal blocks have the same amount of matter?	S	Phys	Almost half knew the blocks should be compared on a balance. Thirty per cent thought their volume should be measured.	49
	Indicate the datum which would not help measure length of time	S	Concepts	A minority chose the correct answer which was a clock striking two o'clock. Among data given were 250 heart beats, 4 revolutions of a second hand on a watch, and a 2 degree movement of a shadow on a sundial. Forty-five per cent chose the heart beats.	27
	Identify the incorrect statement about energy	N	Phys	The untrue statement referred to objects moving at the same speed having the same amount of energy. Twenty-seven per cent thought that energy can be destroyed and 15% that an unmoving object cannot have energy.	35
Identify general phases in a scientific investigation and evaluate examples of each phase	Choose which of 4 statements could be tested by scientific investigation	S	Con	The correct statements referred to the amount of oxygen in polluted versus fresh water and the comparative frequency of two pendulums of different weights. Thirty per cent thought the statement "a square is a plane four-sided figure" should have been included with the two above.	32
	Read information from a simple line graph	M	Con	Thirty-three per cent included observations close to, but not at, the same point described.	56
	Identify the statement which is a hypothesis that could be the subject of a scientific investigation	S	Con	Most could not identify the hypothesis but chose instead statements of a descriptive or definitional nature.	27
Identify attributes of common natural materials, organisms or phenomena of practical significance to mankind	Identify the food not directly made from plants	M	Man	Most correctly chose milk. Twenty-four per cent chose macaroni and the remainder chose from among tea, pepper and cocoa.	62
Identify instances of and problems attributable to man's impact on the environment	Identify the renewable sources of power	S	Man	Falling water and sun was the correct answer. The incorrect options included non-renewable power sources such as natural gas, uranium, coal and oil. Each attracted roughly the same proportion of responses.	52
	Identify the animal in danger of extinction	S	Man	Most correctly chose the plains buffalo. Twelve, ten, seven and six per cent chose the white-tailed deer, coyote, black rat or Pacific salmon, respectively.	62
	Which item from household garbage would be the best addition to a compost heap?	S	Man	Less than half correctly chose carrot greens. Sixteen per cent chose soft drink cans. Others chose glass bottles, plastic containers and cardboard.	41

GEOGRAPHY

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Develop an understanding of North America as a continent	Give the principal agricultural activity of the Niagara penninsula	S	Canada	Twenty-four per cent chose dairying and 14%, wheat.	46
	Identify principal mineral mined around Sudbury	S	Can	Thirteen per cent chose copper. Lead and zinc attracted most of the other responses.	72
	Give the countries which bound the U.S.	M	Can	Most were correct but 13% reversed the direction of Canada and Mexico relative to the U.S.	67

GEOGRAPHY (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
	Identify three major watersheds of Canada	M	Can	The question was quite well done. The incorrect responses were spread across the other choices with a list of three rivers in the west receiving the greatest number.	71
	Identify an island on a map of Canada	M	Can	Most correctly chose Vancouver Island. A few confused it with Queen Charlotte Island and the remainder with islands in the north and east.	77
	Identify a territory on a map of Canada	M	Can	While most correctly identified the Yukon, 19% thought it was Alaska and 9%, the NWT.	64
	Identify a Canadian province on the map	M	Can	While most correctly identified Ontario, 15% chose among four other provinces.	83
	Identify the province best known for oil and natural gas	M	Can	Of those who did not choose Alberta, 13% chose Manitoba, 7%, Ontario, 5%, Newfoundland and 3%, Quebec.	70
	Identify the trees used by the pulp and paper industry	N	Can	More students chose lists including trees such as birch, popular, maple and pine than chose the correct one.	24
	Identify a part of Canada which comes closest to being a geographical region (definition given)	N	Can	The correct response was the prairies. Twenty-three per cent chose Ontario and the remainder divided their responses almost equally among Northern Ontario, Quebec and the Maritimes, and The Northwest Territories.	36
Understand the factors contributing to the weather patterns in Ontario and to climatic variation in N.A.	Ontario weather associated with a stable, arctic air mass in winter	S	Can	Almost 30% chose cold and stormy and an equal proportion chose a mixture of everything from rain to snow with wind.	25
	Identify conditions likely to give a summer thunderstorm	M	Can	The effect of these climatic conditions was more familiar than the previous one. However, a substantial minority did choose options such as a cover of cool, moist Atlantic air, warm, stable high pressure area or cool breezes blowing toward the lake.	58
	Identify the centre where climate varies most between summer and winter	N	Can	Winnipeg was the correct choice although almost as many chose Vancouver. The remaining choices were Victoria, Toronto and Montreal.	28
	Choose best explanation of mild climate on B.C.'s coast	M	Can	Eighteen per cent of the students thought the mountains block off cold air. Fifteen per cent thought the mountains force air to rise and become warmer.	47
Become aware of the factors influencing historical and contemporary population density and distribution	Identify reason for Ottawa's growth over last 10 years	S	Can	Twenty-one per cent thought it was the growth of heavy industry. Another 20% split evenly between a growth in the pulp and paper industry and in agriculture.	46
	From information given identify the main factors which accounted for the original location of Winnipeg	S	Can	Most correctly identified the relationship to major rivers. Nineteen per cent thought the factor was the closeness to a railway line.	55
Understand distances and directions of selected locations from Ontario and Canada	Give the direction of an airplane flight from Whitehorse to Edmonton	N	Can	Forty-six per cent chose northeast or southwest.	38
Become aware of oceans and land masses comprising the Southern Hemisphere	Name ocean indicated on world map	M	Southern Continents	Most correctly identified it as the Indian ocean.	74
	Name the country which contains most of a river basin shown on the map	S	S Con	Most correctly identified Brazil. Eleven per cent chose South Africa and the remainder chose among Argentina, Australia and Venezuela.	62

GEOGRAPHY (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Understand climate patterns in the Southern Hemisphere	Describe the characteristics of a region indicated on the map	N	S Con	The correct choice was an Australian temperate grassland and its agricultural products. Incorrect choices included an equatorial forest, tropical grassland and a desert.	51
	Describe a river basin indicated on the map	N	S Con	The correct choice was the Amazon equatorial forest. Eighteen per cent thought it was a hot, dry desert. Fifteen per cent thought the basin supported a dense population on rice and vegetables and the same proporation thought it consisted of a high plateau.	38
Develop the ability to obtain information from a variety of sources, i.e., maps, charts, graphs	Identify city on map of Ontario	S	Can	The city was London. Twenty-nine per cent thought it was Toronto, 14%, Kingston and the remainder chose either Ottawa or Thunder Bay.	37
	Identify lake on a map of Ontario	M	Can	The majority correctly identified the lake as Superior and the remainder spread their choices evenly among the other great lakes.	64
	From a map, deduct the latitude of St. John's	S	Can	Thirty-two per cent confused the measure for longitude and the remainder chose two locations in the southern hemisphere.	40
	Identify the parallel of latitude forming most of the Canada/U.S. boundary west of the Great Lakes	N	Can	Twenty-one per cent choice 45^{0} and and 15% chose 42^{0}.	28
Develop the ability to communicate information	Choose the right way to show geographical information on a map or diagram	N	S Con	The correct response described how to show precipitation. The incorrect alternatives were non-sensical descriptions of how to give information, i.e., show temperature by using one dot for every two degrees celsius.	30

HISTORY

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Understand the lives of settlers (including original peoples)	Where first North Americans are thought to have come from	M	Pre-Con-federation	Forty per cent of the students chose options referring to Europe rather than correctly identifying the polar ice route from Asia.	39
	Identify a list of things native peoples taught Europeans	S	Pre-Con	Students not choosing the correct answer divided their responses evenly among options including technology imported from Europe.	65
	Identify the means of livelihood in the early 1800's	M	Pre-Con	Most correctly identified the list of primary industries engaged in at that time. The remainder distributed their responses among the options including secondary and tertiary sector occupations.	69
Understand the significance of Confederation	Identify the most accurate statement about Confederation	M	Post-Con-federation	The correct response that four provinces came together to form a federation was chosen by very few. Twenty-two per cent thought it marked the coming together of Ontario and Quebec and 20% thought all provinces except Newfoundland formed a union.	27
	Most important function of BNA Act	M	Post-Con	Relatively few could identify the distribution of federal and provincial powers as correct. Twenty-two per cent thought it gave Canadians the right to "liberty, justice and the pursuit of happiness" and 21% thought the constitution resided in Canada rather than Britain.	28
	Identify Canada's first Prime Minister	M	Post-Con	Nine per cent chose Abraham Lincoln.	67

HISTORY (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Understand problems and issues arising from Canada's French/English duality	How long before 1759 had the French been in the New World	S	Pre-Con	Seventy per cent thought they had been here 50 years or less. Thirty-six per cent thought the French had been here only 10 years before the conquest.	22
	Identify an event in the French/English struggle in the Maritimes	N	Pre-Con	The greatest number thought that English settlers were brought in from Upper Canada. Nineteen per cent chose the Charlottetown Conference of 1864.	21
	Identify Canada's first francophone Prime Minister	N	Post-Con	Twenty-three per cent chose Trudeau and 18% chose Riel.	28
	Identify the event which did not involve conflict between English and French	N	Post-Con	The events which did involve conflict included the conscription question in both World Wars, Manitoba School Question and the Laporte murder. The correct response was the granting of provincial status to B.C.	23
Understand different development of Canada's region	The value of the CPR for Canada	M	Post-Con	Most correctly identified its value for both defence and commerce. Nineteen per cent thought it was related to fur trading and mining on the prairies.	50
	Characterize immigrant settlement in Western Canada in late 19th-early 20th century	N	Post-Con	Twenty-five per cent thought they came from all nations in search of mineral deposits on the prairies. Twenty-eight per cent thought they came either from the Eastern or Western United States. Nineteen per cent correctly identified their arrival through eastern ports but thought they travelled west by road and river. A minority knew they came mainly from Eastern Europe and found hardships adjusting to the harsh climate.	23
	Identify the description of the United Empire Loyalist	S	Pre-Con	Twenty-two per cent chose a description of a fictitious twentieth century loyalist group. The remaining responses were divided among other non-existent groups in Britain, French Canada and the U.S.	42
Understand political, social and economic factors leading to change	Identify a reason for the 1837 rebellion in Upper Canada	N	Pre-Con	Twenty-six per cent thought the rebellion was intended to unite the provinces. Getting rid of British or French influence were other choices.	36
Understand the role of people from various backgrounds in Canada's development	The origin of immigrants to BNA between 1812-67	N	Pre-Con	Not a very difficult item although 29% thought this was a period of heavy immigration from France. Six, 5 and 2% chose the Ukraine, Germany and India respectively.	56
Understand the influence of other important aspects on Canada today	Choose the most important result of 1812 War for BNA	N	Pre-Con	Seventy per cent thought that territorial expansion was the result. Thirty per cent thought the war was concerned with defending the colony from the French.	35
	Identify the best description of the effects of the 1930's depression in Canada	M	Post-Con	The incorrect responses were spread fairly evenly among options claiming that the 30's were the same as the depression of 1977 & 78, that New York financiers threw themselves out of windows as the money market went broke, that there was not much effect or that it only affected the rich.	56
	Pick out the statement that was not an effect of World War II on Canada	S	Post-Con	The untrue statement claimed that enemy planes bombed Canadian cities. It would appear that 67% thought Canada was bombed during the war. The true effects referred to the increased employment in war industries, sale of farm produce, increased governmental powers and the focus of interest on European battles.	33

HISTORY (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
	Foreign source of capital for developing industry since 1945	M	Post-Con	Twenty-three per cent chose Great Britain and 10% chose Japan.	54
Develop skills necessary for a study of history	Identify the most important source for a historian studying 19th century Upper Canada	N	Post-Con	The best option was to study original writings and records of the time. The other options referred to the use of secondary sources or discussions with other historians.	34

CANADIAN STUDIES

Objective	Item Characteristics	Classification	Description of Results	% Correct
Develop an understanding of Canada and the Canadian identity	Identify Canada's capital	M	Seven per cent thought Toronto was the capital.	86
	Identify the number of provinces and territories comprising Canada	M	This item caused considerable difficulty in that almost 20% chose the option of nine provinces with either one or two territories.	70
	Identify the size of Canada's population	S	This item was rather poorly done with many students thinking the population is larger than it is, i.e., 35 million attracted 22% of the responses and 149 million attracted 18%.	49
	Identify the difference between democratic and communist, totalitarian countries	S	This item proved to be difficult as students opted for popular misconceptions of the differences rather than identifying elections and the possibility of changing governments.	45
	Define multiculturalism	N	As many students chose the "melting pot" description as chose the correct answer.	24
	Where is there a concentration of Inuit people?	S	With the 20% choosing Yukon it is not clear whether they were confused about the location or about who the Inuit were. The other incorrect responses were spread over provinces which were clearly wrong.	46
	Identify a list of Canadian artists	S	Those students who could not identify the correct list containing, among others, Stephen Leacock, Tom Thompson and Pierre Berton chose with almost equal frequency the four other lists comprised of internationally famous, but not Canadian, artists.	54
	Identify a list of Canadian books	S	A sizable minority (21%) chose a list containing two Mark Twain books over the correct answer containing Anne of Green Gables and The Dog Who Wouldn't Be.	39
Become aware of significant issues facing Canadians today	Identify the correct statements about Quebec	N	Seventy-five per cent of the students thought that Quebec is the only province with more than 10% of the population as French speaking. Most did not know the extent of the English-speaking population.	12
	Assess accuracy of statements comparing immigration in the 70's with 1900-1910	N	The distribution of responses indicates that students are not familiar with immigration patterns.	28
	Pick out which one of five statements is not a regional problem	S	Most students chose incorrectly from among the regional concerns expressed by Quebecois, Maritimers, Albertans and people on the prairies.	37
	Identify an inaccurate statement about American influence	S	A minority of the students knew that schools use mainly Canadian textbooks. Almost as many thought that breakfast cereals are made by Canadian companies and that Canadians visit other countries more frequently than the US.	29

CANADIAN STUDIES (Continued)

Objectives	Item Characteristics	Classification	Description of Results	% Correct
Understand Canada's political system and become familiar with major participants and their view points	Identify the Queen's representative at the Federal level	S	Most of the incorrect responses identified the Prime Minister although a sizable group chose the Lieutenant Governor.	39
	Indicate difference between Canadian and US senate	N	This item was more difficult since it required knowledge of both systems of government. Those students who could not correctly identify appointment versus election as the difference, chose regional representation, participation in legislature process and party membership with almost equal frequency.	48
	Identify Canada's principal political parties	M	Forty per cent of the students did not know the correct answer — 24% chose Democratic, Liberal, Republican.	60
	Identify the Prime Minister	M	Four per cent chose Jimmy Carter, 3%, Bill Davis and 2%, Joe Clark.	86
	Identify the statement best describing the Liberal (Federal) Party	N	The majority could not identify the Liberals as: being supported mainly in Ontario and Quebec, believing in a strong federal government and supporting bilingualism and biculturalism.	26
Develop an understanding of Canada's economic system	Identify the major foreign owner of the resources and manufacturing industries	S	Twenty-four per cent chose Great Britain and 11% chose Japan.	57
	Identify the accurate statement about the economy	N	The correct option described Canada as unique among industrial nations in the extent of its import of manufactured goods. Twenty-eight per cent thought Canada came second only to the U.S. as the most highly industrialized western country. Thirteen per cent thought that we do not export natural resources and the same proportion thought that we do not import manufactured goods.	34

HEALTH

		Classification	Subtest	Description of Results	% Correct
Identify major parts of the body and become familiar with the mechanisms of bodily functions	What carries oxygen from lungs to body cells?	M	Physiology	Most chose blood vessels. Eight per cent chose glands and 5%, intestines.	76
	What are hormones?	N	Phys	Few knew they were chemicals. Fifty-two per cent thought they were nerves. The remaining responses were spread evenly among parts of the ear, bones and vitamins.	24
	Identify the incorrect way of maintaining the heart and circulatory systems	S	Health Rules	Most knew that food with a substantial supply of cholesterol is not beneficial. The correct activities listed included vigorous exercise and eating a balanced diet.	64
Identify stages and mechanisms of development in humans	What is a foetus?	S	Phys	A stage of human development was the correct response. Seventeen per cent thought it was part of the skeleton and 16% thought it was a chemical.	41
	What per cent of chromosomes come from each parent?	S	Phys	Most knew it was 50%. Twelve per cent thought 25% came from the father and 75% from the mother and ten per cent thought it was the reverse.	68
	What color eyes are most likely for children whose parents both have blue (recessive) eyes?	N	Phys	Twelve per cent thought they would all have brown eyes. The other incorrect options were various combinations of blue and brown eyes.	42

HEALTH (Continued)

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Identify structures and processes underlying human sexuality	The human body is nourished and grows in the mother's:	S	Phys	Nineteen per cent thought it was the uterus. Thirteen per cent chose ovum and 12%, vagina.	47
	Human being sperm cells are made in the:	S	Phys	Thirty-three per cent thought it was the sperm duct and 19%, the penis.	39
Identify structures and processes involved in digestion and become aware of nutrition appropriate to the maintenance of good health	Identify the three basic food substances	M	H R	Twenty-two per cent chose protein, oxygen and vitamins. Fifteen per cent thought calcium and water were correct.	49
	Digestion is the process of:	M	Phys	Thirteen per cent thought it was the absorbing of food. Ten per cent thought it was the getting rid of waste.	62
	If loss of weight is desirable, what is the best general way to lose weight?	M	H R	Eat less was the correct answer. Fifty-three per cent chose developing a diet consisting mainly of protein and essential vitamins. Fourteen per cent thought all fats should be removed from the diet.	13
Identify substances and practices used as forms of stimulation, to alter moods, or to influence habits	Identify the most correct statement about drugs	M	Phys	Half knew that drugs alter bodily functions. Twenty-two per cent thought that all drugs create habitual users and 18% thought all drugs are harmful.	50
	Which is not a possible long term effect of heavy alcohol usage?	M	Phys	Hair color change was the correct answer. The incorrect responses were spread among effects such as malnutrition and liver damage.	62
	Society attempts to limit the smoking habit in all the following ways except:	S	H R	The correct answer was the prohibition of cigarette advertising. Twenty-four per cent thought there is no prohibition of sale to young children and the same proportion thought there is no segregation of smokers from non-smokers.	27
Identify environmental conditions affecting health and practices relating to those contributing to good health	Identify the distinguishing characteristic between two lists of common diseases	S	Phys	Most correctly identified the first list (i.e., measles) as communicable and the second (i.e., diabetes) as not. Seventeen per cent thought the first list requires confinement in bed. The second list was thought to require hospitalization by 16% of the students.	52
	Identify the incorrect statement about venereal disease organisms	M	Phys	The incorrect statement claimed one could become immune to them. Fifteen per cent of the students thought one could not have more than one such disease and 13% thought they were not usually spread by sexual contact.	43
	A person whose clothes are on fire should:	M	H R	Most knew that one should drop down and roll. Four per cent thought one should try to take off the clothes.	83
	What does not reduce danger from road accidents?	S	H R	Most correctly identified seat covers. Twelve per cent chose seat belts and 11%, a collapsible steering wheel.	60
Identify relationships between health issues and personal and societal values	Identify the menu that is not a reasonably well balanced nutritional lunch for a teenager	M	H R	The correct answer was four slices of bread and jam, cookies, cake, and chocolate milk. Thirty-two per cent thought that a hamburger, cole slaw, french fries and milk shake was a less nutritious lunch than the one above.	49

FRENCH COMPREHENSION

Objective	Item Characteristics	Classification	Subtest	Description of Results	% Correct
Acquire a sufficient knowledge of French to be able to participate in a simple conversation	Listen to a dialogue recorded on a tape and choose the sentence which would best complete the dialogue	M	Listen-ing	Twenty-two per cent chose an option which indicated the probably confusion of est and a.	58
	Choose from among five sentences the one which was repeated twice on the recording	M	List	Well done although 7% mistook vas for veux.	81
	As above	M	List	Thirty-one per cent heard blancs rather than blonds.	53
Acquire a basic vocabulary sufficient to permit communication in French in everyday life	Choose the written word or phrase which best describes the picture	S	Under-standing	Eleven per cent mistook la chambre for le salon. Six per cent chose la cuisine and 5%, la salle à manger.	69
	As above	S	Und	Twenty-two per cent mistook en avion for à pied.	71
	As above	M	Und	The correct option was de l'eau. Nine per cent chose de la bière and 8%, du lait.	68
	As above	M	Und	Eleven per cent mistook doigt for main. Five per cent chose pied and the same proportion chose oreille.	72
	Choose the picture which is described by the accompanying sentence	M	Und	Nine per cent confused pleut with neige.	74
	As above	S	Und	The sentence was - Guy a mal au dos. Fifteen per cent chose a picture of a bandaged toe.	53
Develop the ability to read simple passages with the help of a dictionary	After reading the short story choose the correct answer to the question	S	Reading	Twelve per cent chose the option giving the number of children in a family rather than the number of people that was asked for.	77
	As above	S	Read	Twenty-eight per cent chose among three options which were too restrictive as descriptions of the family's activities in July. Fourteen per cent chose an option which was clearly wrong.	55
	As above	S	Read	Forty-five per cent chose the hotel where the family stayed as the highest building rather than la Banque de Commerce which was described as such in the story.	37
	Read the text and fill in the blank with one of the five words provided for each blank	N	Read	The correct answer was de. The wrong answers all were nouns.	73
	As above	N	Read	The correct answer was the indefinite article une before bicyclette. Nineteen per cent chose the definite article la.	44
	As above	N	Read	The preposition dans was correct in the sentence - Paul va le jardin...Seventeen per cent chose avec, 12%, pour and 11%, sous.	47
	As above	N	Read	"Voici ton cadeau," ____ son oncle. Twenty per cent chose parle rather than dit. Nineteen per cent chose arrive, 11%, chante and 11%, écoute.	30

PHYSICAL FITNESS

Proportion of Students at and above Each Level with the Minimum Score for the Level

Test	Age	MALES Competence %	Competence Score	Honors %	Honors Score	High Honors %	High Honors Score	N	FEMALES Competence %	Competence Score	Honors %	Honors Score	High Honors %	High Honors Score	N
Power Reach (muscular strength-power) From a standing position beside a wall the student first extends the arm to a maximum reach and then jumps to a maximum reach. The difference between the two reaches is measured. (Unit = cm)	Under 13	71	30	29	40	0	50	7	80	25	10	35	0	45	10
	13	59	35	20	45	5	50	207	81	25	32	35	4	45	250
	Over 13	66	35	8	50	4	55	296	60	30	13	40	0	50	232
Sit-Reach-Hold (flexibility) In a sitting position, the student bends at the waist to extend hands as far forward as possible. (Unit = cm)	Under 13	95	-5	65	+5	40	+10	20							
	13	86	0	36	+10	13	+15	442			(male and female combined)				
	Over 13	83	0	35	+10	15	+15	526							
Back Extension (flexibility) In a front lying position, the student lifts his/her upper body as far as possible above the floor. (Unit = m)	Under 13	84	20	68	30	42	40	19							
	13	97	20	88	30	64	40	456			(male and female combined)				
	Over 13	91	25	74	35	32	45	528							
Basketball Throw (muscular strength-power) The student is in a sitting position to throw the basketball the maximum distance. (Unit = cm)	Under 13	100	3	78	4	11	7	9	100	2	100	3	22	6	9
	13	99	3	71	5	17	7	207	100	3	96	4	14	6	251
	Over 13	98	4	57	6	9	8	296	99	3	92	5	4	7	234
Agility Shuttle (agility) From a front lying position, the student runs 8 metres to pick up an object and return to the starting line. Four objects are picked up and returned individually. (Unit = s)	Under 13	78	24	11	21	11	20	9	90	25	55	23	36	22	11
	13	84	23	61	21	39	20	206	79	24	67	23	31	21	251
	Over 13	81	23	39	20	24	19	299	79	24	46	22	15	20	230
Knee Touch (muscular endurance) In a back lying position with hands clasped behind the head, the student sits up and touches the knees with both elbows as many times as possible in one minute. (Unit = #)	Under 13	63	30	50	40	50	54	8	67	27	42	39	17	51	12
	13	93	30	65	40	13	54	204	88	27	57	39	24	51	249
	Over 13	67	36	32	48	4	60	297	76	30	33	42	11	54	230
Standing Balance (balance) Blindfolded, the student stands on one foot with the instep of the other foot locked behind the knee as long as possible. (Unit = s)	All ages	61	10	26	30	14	60	1003			(male and female combined)				
Endurance Run (cardio-respiratory endurance) The student runs, jogs or walks a 1500 metre distance as quickly as possible. (Unit = min and s)	Under 13	56	8.59	33	6.59	0	6.14	9	67	8.59	8	7.29	8	6.29	12
	13	88	8.29	31	6.29	5	5.44	188	64	8.59	27	7.29	3	6.14	212
	Over 13	71	7.59	9	5.59	1	5.14	277	56	8.59	8	6.59	1	5.59	197
Total**	Under 13	50		17		0		6	50		13		13		8
	13	85		31		1		177	76		30		3		195
	Over 13	64		13		0		258	62		13		0		183

*includes all students at and above this level
**the total is based only on those students who completed all tests

IV. Future Developments

The project's financial support ends in April 1979, although we are investigating the possibility of extending our program in the area of written English where there is no alternative available service foreseen. That extension will depend on the willingness of boards, or some other agency, to finance the program. Given a minimum of 7000 pupils involved in the program, the per pupil cost will be approximately $4.00. The written English testing is of course by far the most expensive part of the program.

Our plan is to bring most of the tests to a published form by April 1979. At that time, they should be available together with teachers' handbooks, scoring manuals etc. We may publish them through a private company, we may publish them ourselves, or we may use a combination of both methods.

We have already administered national forms of most of the tests to samples of students throughout Canada, so that national norms will be available when the tests are published. Some of the tests (values and moral reasoning for example) will still be highly experimental. Others, reading, science and mathematics, for example, should be in good shape by next spring.

V. Involvement in the Test

Those responsible for the Intermediate Evaluation Project are:

B. Cassie (OISE Niagara Centre--physical fitness)

D. Ellis (OISE--mathematics and social studies)

P. Evans (OISE Midnorthern Centre--written English, reading, language, francais ecrit)

M. Holmes (OISE--Project Director--attitudes, values, moral reasoning, social studies)

D. Jantzi (OISE--Project Coordinator--history)

R. Lamerand (OISE--francais lecture)

J. Macpherson (Lakehead Board of Education--French comprehension)

M.-N. Maillard (OISE--Coordinator--French language schools and French language tests, French comprehension)

W. Postl (OISE--Statistical Consultant)

F. Robinson (OISE Northeastern Centre--problem solving)

R. Stinson (OISE Western Ontario Centre--science, health)

R. Wolfe (OISE--Statistical Consultant)

All of us involved at OISE would like to thank the many boards, administrators, and teachers for their support. We fully realize that one gets few thanks for carrying out a hard evaluation and that the widespread cooperation throughout Ontario is an expression of the genuine professional concern of large numbers of educators.

Mark Holmes
D. Jantzi
OISE

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